



Health Impacts of Ports and Goods Movement

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Southern California Environmental Health Sciences Center, Los Angeles

- An NIEHS Environmental Sciences Center
- Community Outreach and Education Program
 - Liaison between public and University of Southern California and UCLA scientists conducting environmental health research
 - Focus: air pollution and health effects
 - New concerns: expansion of Ports and “goods movement” infrastructure to accommodate rising trade from Asia

Comments to Sandag on Item 12

- Board of Directors' approval of PRELIMINARY LIST OF FREIGHT INFRASTRUCTURE PROJECTS FOR THE SAN DIEGO REGION
- Sandag staff has been working with the Freight Working Group to develop a San Diego Regional Goods Movement Action Plan and Freight Intermodal Strategy
- FWG developed evaluation criteria for infrastructure projects

Evaluation Criteria

- 10 project evaluation criteria, organized into three categories of importance:
 - “cost-effectiveness” (30 points);
 - “throughput, velocity, and congestion reduction” (45 points); and
 - “impacts, connectivity, and economic benefit” (25 points), for a possible total project evaluation score of 100 points

What about health of residents near infrastructure projects?

- (Only) 5 points if a project:
 - Reduces Community Impacts
 - Avoids or Minimizes Negative Community Impacts
 - (i.e., air quality, noise, safety)



Similar actions in L.A.

- Multi-County Goods Movement Action Plan
- Mayor of L.A. – list of infrastructure project he supports to Governor
- Southern California Association of Governments (SCAG)
 - Goods Movement Task Force

Differences

- In L.A.:
 - Involvement of community, environmental and public health groups
 - Mayor's office met regularly with a selected group
 - In advance of submitting list to Governor
 - 6 appointees to SCAG Goods Movement Task Force
 - These groups bring to forefront concerns of
 - Air pollution
 - Noise
 - Costs to health and society of infrastructure expansion

Evaluation criteria – if public involvement

- A very different process with community involvement
- I-710 expansion project
 - Extensive public process after outcry re lack of participation and knowledge
 - Community Advisory Committee set up
 - Included representatives of residents, community groups, trucking firms, asthma awareness advocates, and more
 - The CAC voted: “Number one priority in any I-710 expansion is HEALTH”







Imports from Asia are Skyrocketing – Especially into California Ports



Inside the containers:

Electronics

Toys

Furniture

Textiles

Clothing

Vehicles

Largest U.S. Container Ports and “Rank” in the World

US Rank	World Rank	
• 1. Los Angeles	8	Combined:
• 2. Long Beach	12	#5 in world
• 2. NY/New Jersey	15	
• 3. Oakland	40	
• 4. Hampton Roads	42	
• 5. Charleston	46	
• 6. Tacoma	48	Combined:
• 7. Seattle	49	#20 in world

Documented Health Impacts of Goods Movement



A Public Health Concern

- “Air pollution from international trade and goods movement is a major public health concern at the statewide, regional and community level.”

Health Impacts

- Adverse health impacts from the pollutants associated with goods movement include but are not limited to
 - premature death, cancer risk, respiratory illnesses, and increased risk of heart disease....
 - Adverse birth outcomes and neurotoxicity are additional potential health effects.

Health Disparities - Disproportionate Impacts

- “The Californians who live near ports, rail yards, and along high traffic corridors, are subsidizing the goods movement sector with their health.”
 - Those living closest are more often lower-income and more often minority

International Trade: Emission Sources



Ocean-Going
Vessels, including
cruise ships



Harbor Craft (e.g.
tugboats)

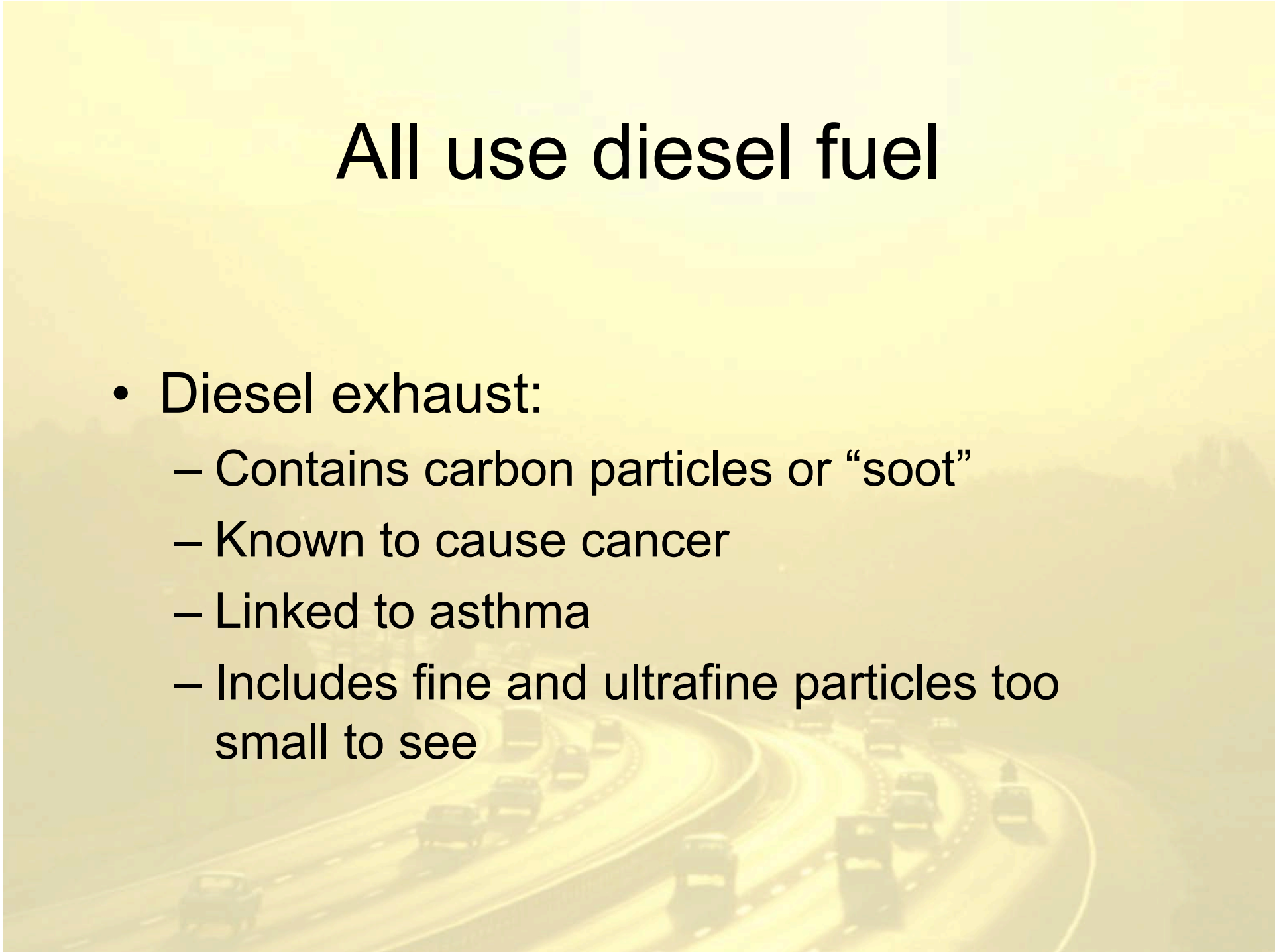
Emissions sources, continued

- Trucks
- Locomotives
- Yard Equipment
- And more...



All use diesel fuel

- Diesel exhaust:
 - Contains carbon particles or “soot”
 - Known to cause cancer
 - Linked to asthma
 - Includes fine and ultrafine particles too small to see



Diesel Particulate Matter (PM)

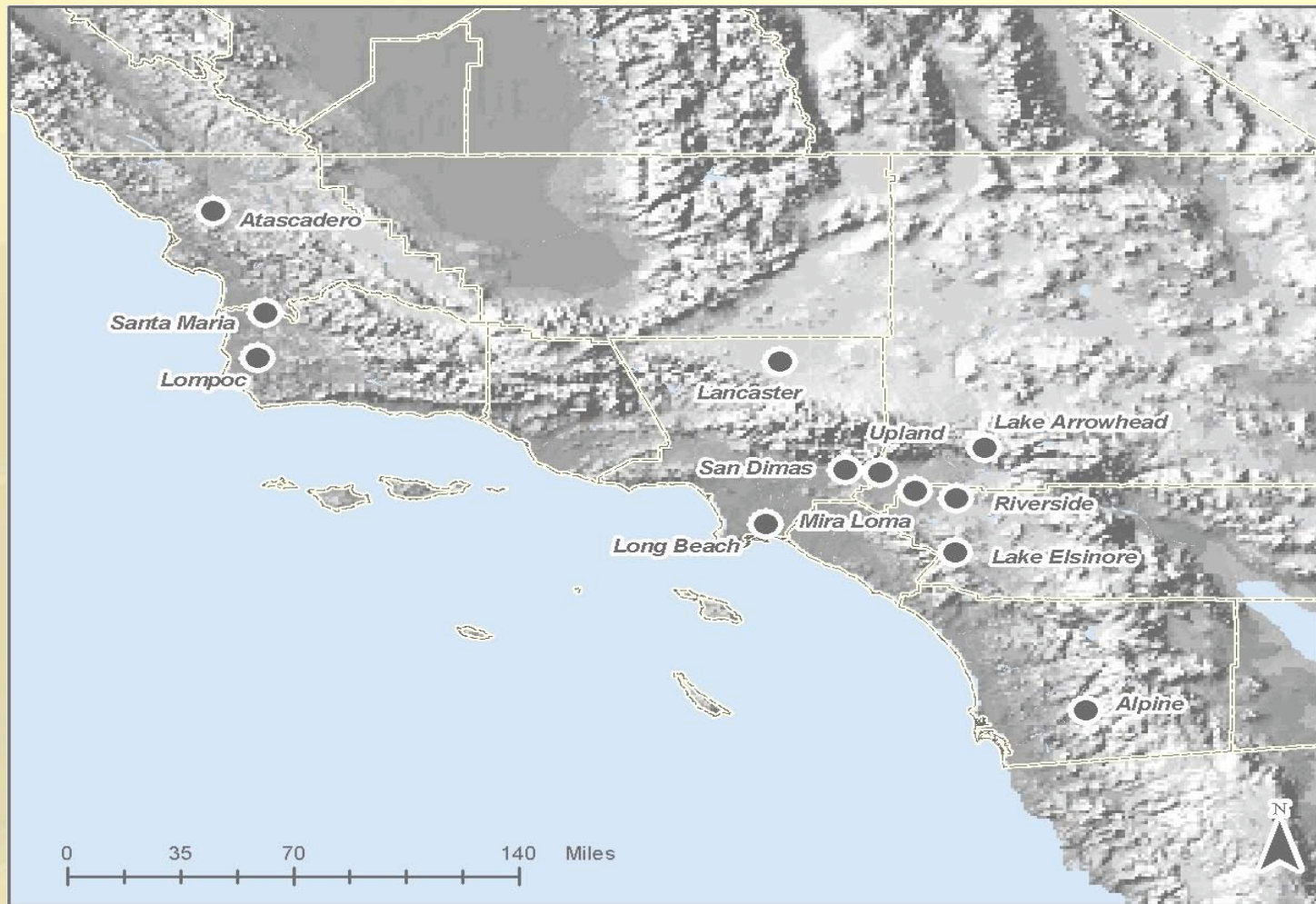
- Diesel PM from the Ports contributes >20 % of the South Coast Basin PM emissions

CARB, 2005 study

A Regional & Local Issue

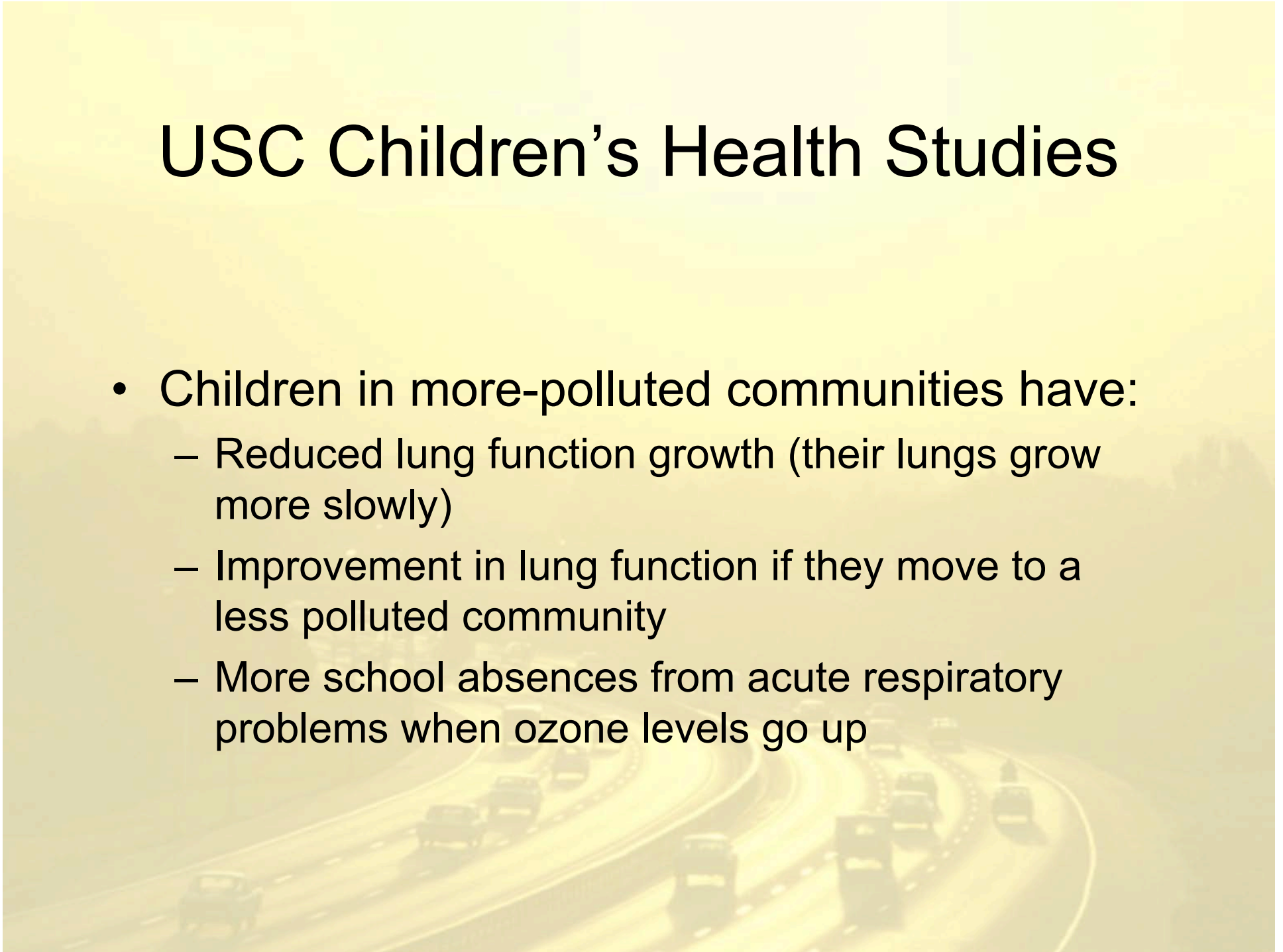
- Ships bring millions of imported containers into the Ports
 - Adds to regional pollution
- Each container “becomes a truck” on the freeway or ends up on a train
- Rail yards, freeways, distribution centers)
 - create local problems in the communities where they operate
 - especially air pollution and noise


USC Children's Health Study



USC Children's Health Studies

- Children in more-polluted communities have:
 - Reduced lung function growth (their lungs grow more slowly)
 - Improvement in lung function if they move to a less polluted community
 - More school absences from acute respiratory problems when ozone levels go up



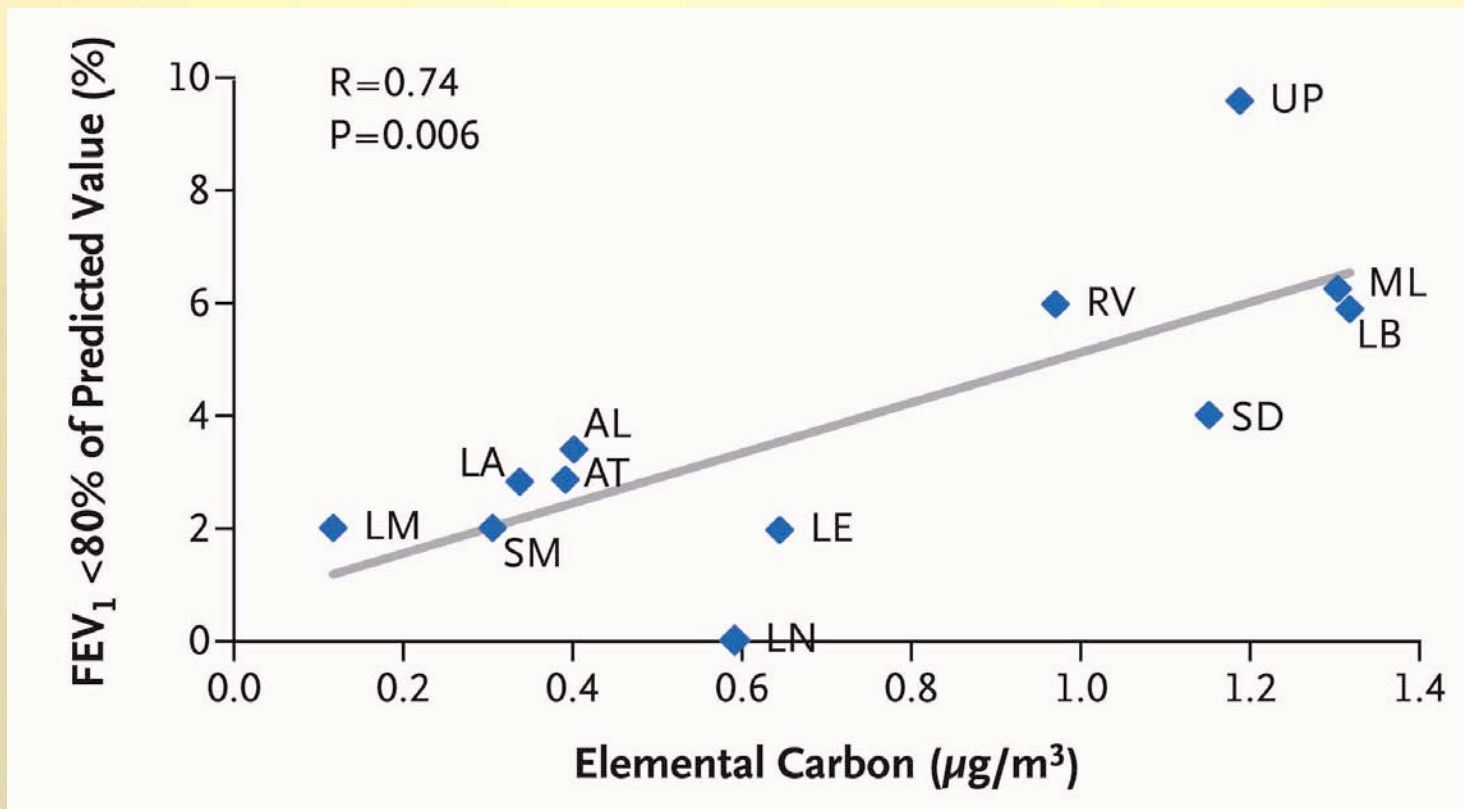


18-year olds growing up in polluted communities in Southern California have a 5-fold risk of having abnormal lungs – related to a package of traffic-related pollutants

(e.g., PM, NO₂, elemental carbon)

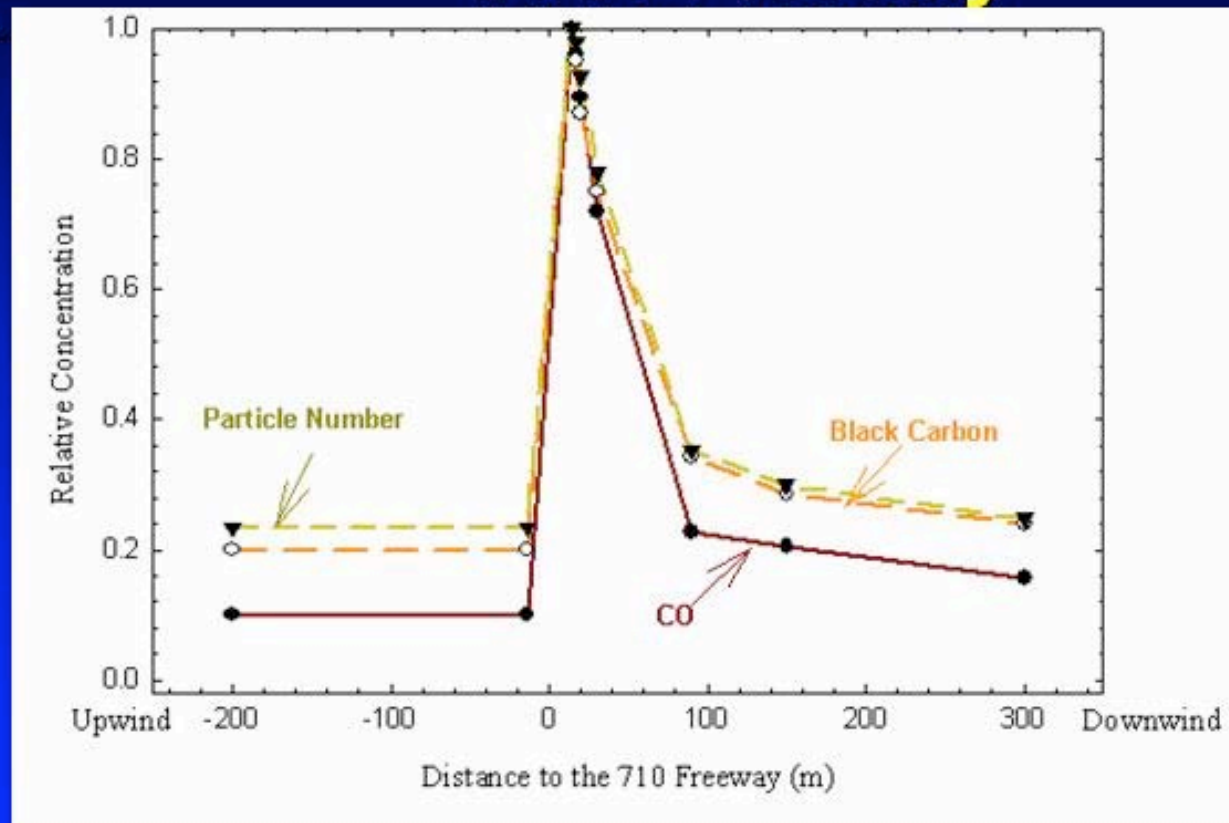
Gauderman et al. USC, NEJM, 2004

Abnormal Lung Function – Diesel Exhaust Exposure (as indicated by elemental carbon)



Gauderman et al [USC], *NEJM*, 2004

Ultrafine particles measured near the I-710 Freeway*

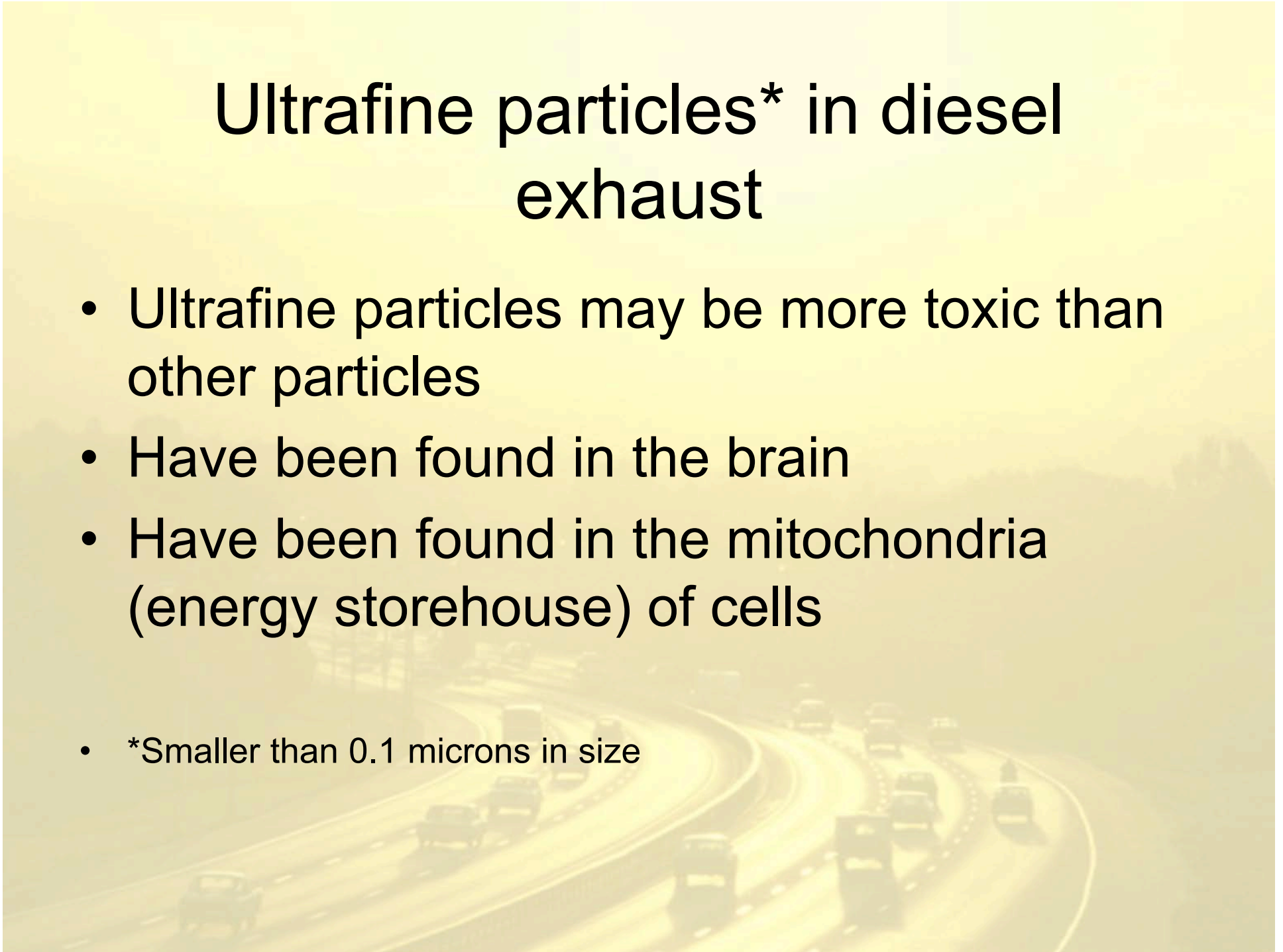


(Zhu et al, 2002)

* 0 = Center of Freeway

Ultrafine particles* in diesel exhaust

- Ultrafine particles may be more toxic than other particles
- Have been found in the brain
- Have been found in the mitochondria (energy storehouse) of cells
- *Smaller than 0.1 microns in size



Health Impacts -- Proximity to Traffic

- LIVING NEAR BUSY ROADS AND FREEWAYS IS LINKED TO:
 - Increased asthma
 - Cardiopulmonary mortality (deaths related to the heart or lungs)
 - shortened life expectancy



Truck on 710 Freeway















Port expansions

- Nearly all ports in U.S. are considering expansions to accommodate more Asian imports

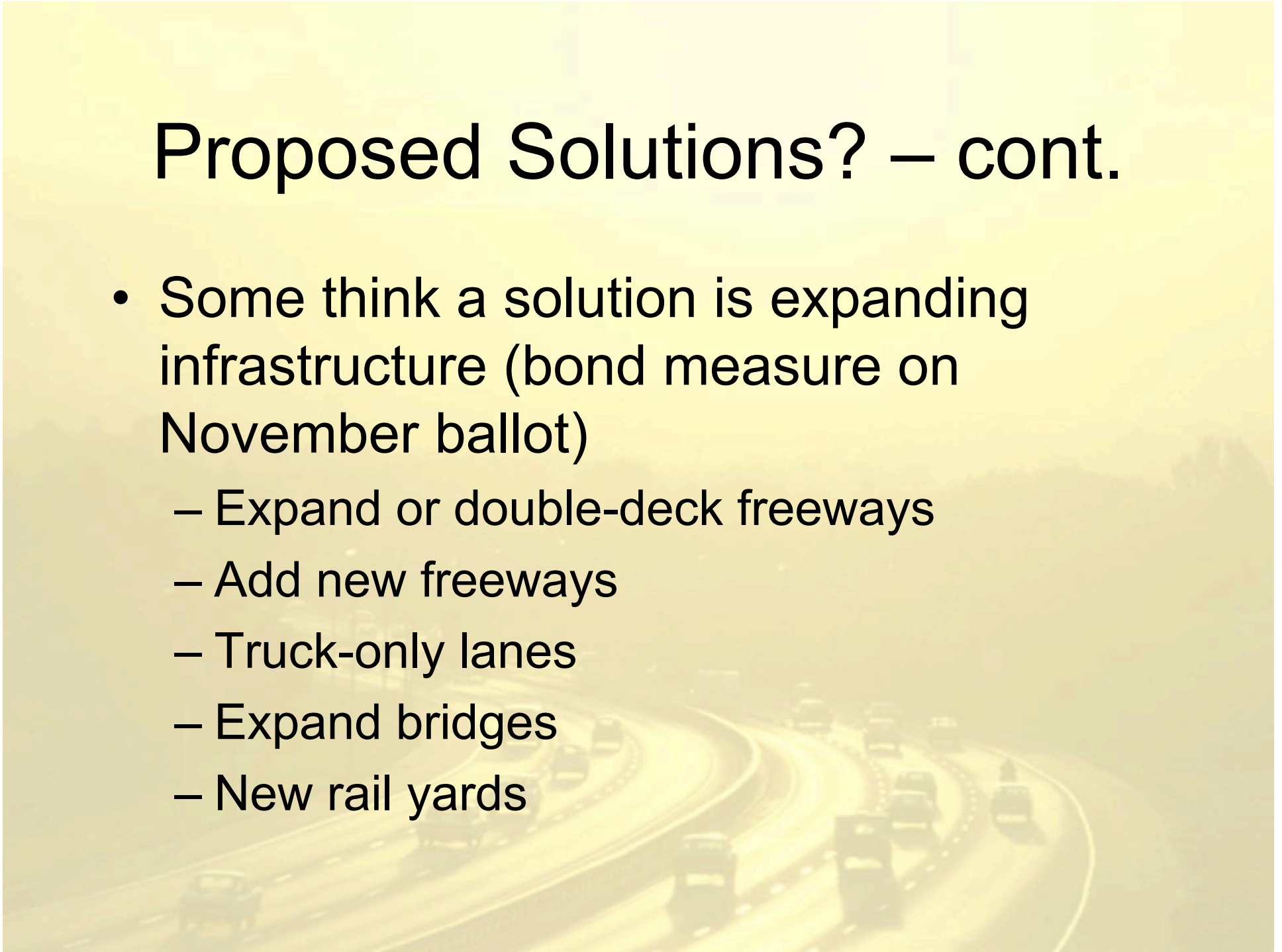


Proposed Solutions?

- Twin Ports of Los Angeles/Long Beach have developed a “Clean Air Action Plan”
 - Extensive public comment
 - Now being revised
 - Will be adopted in a month or so

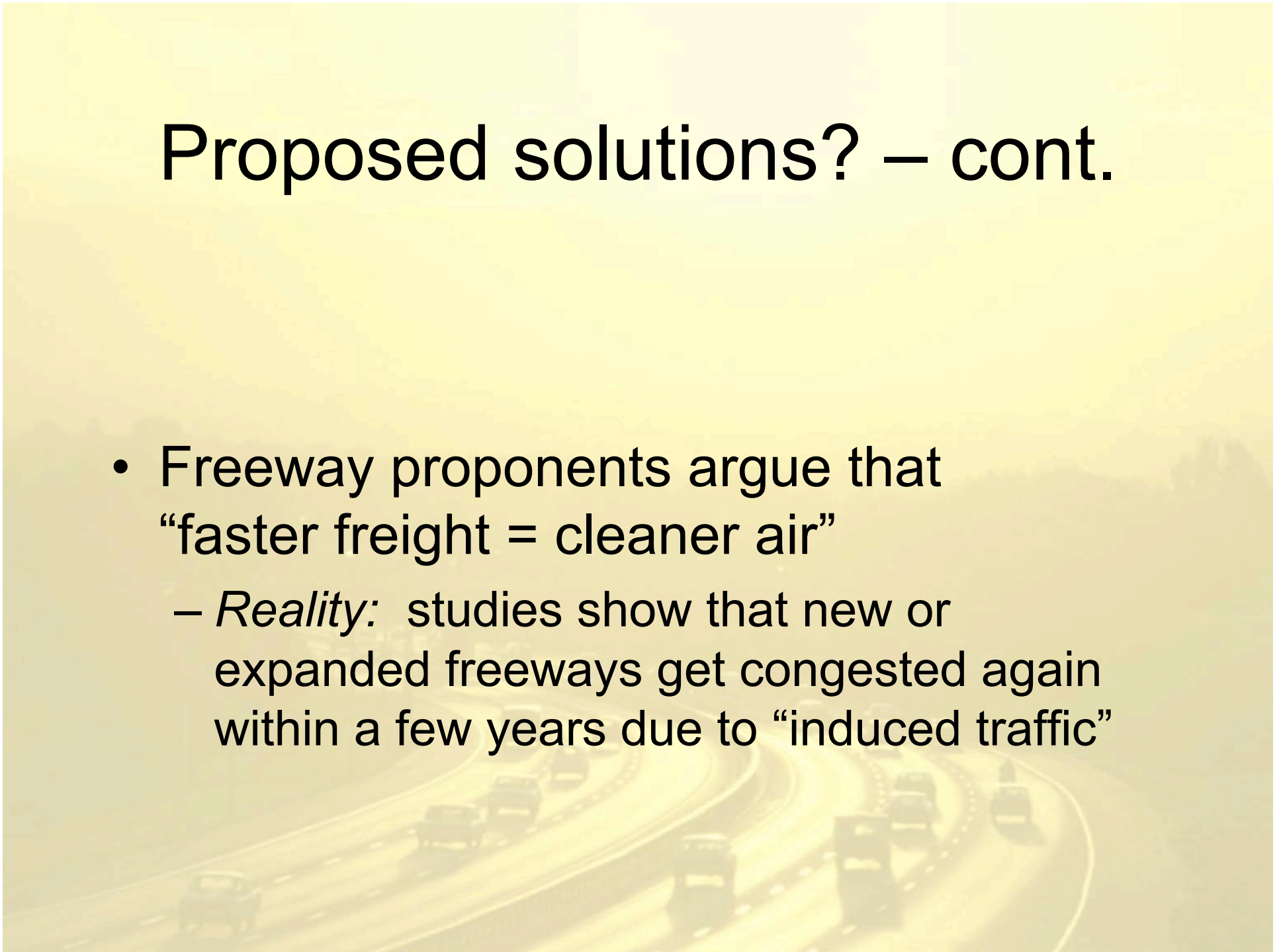
Proposed Solutions? – cont.

- Some think a solution is expanding infrastructure (bond measure on November ballot)
 - Expand or double-deck freeways
 - Add new freeways
 - Truck-only lanes
 - Expand bridges
 - New rail yards



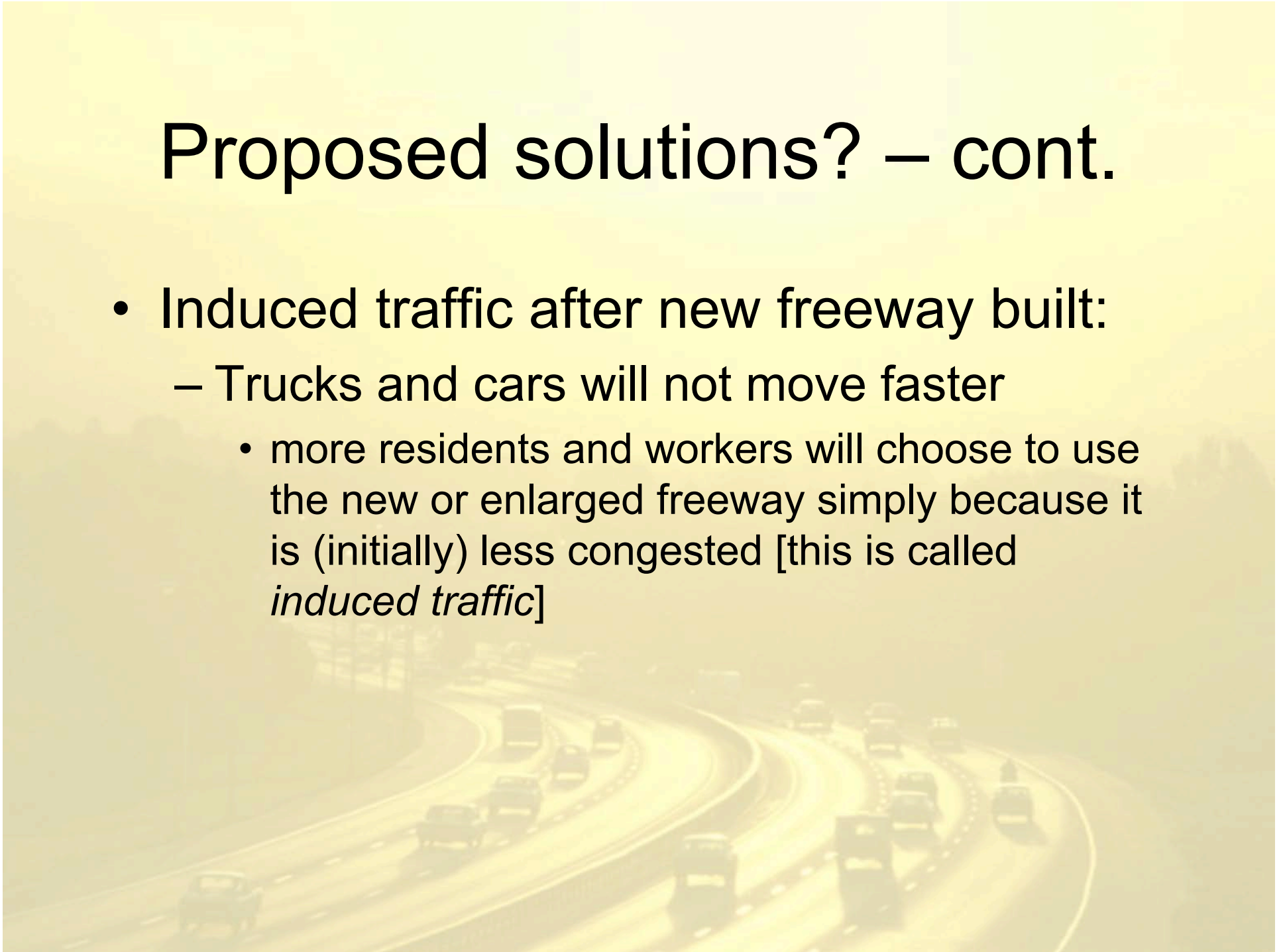
Proposed solutions? – cont.

- Freeway proponents argue that “faster freight = cleaner air”
 - *Reality:* studies show that new or expanded freeways get congested again within a few years due to “induced traffic”



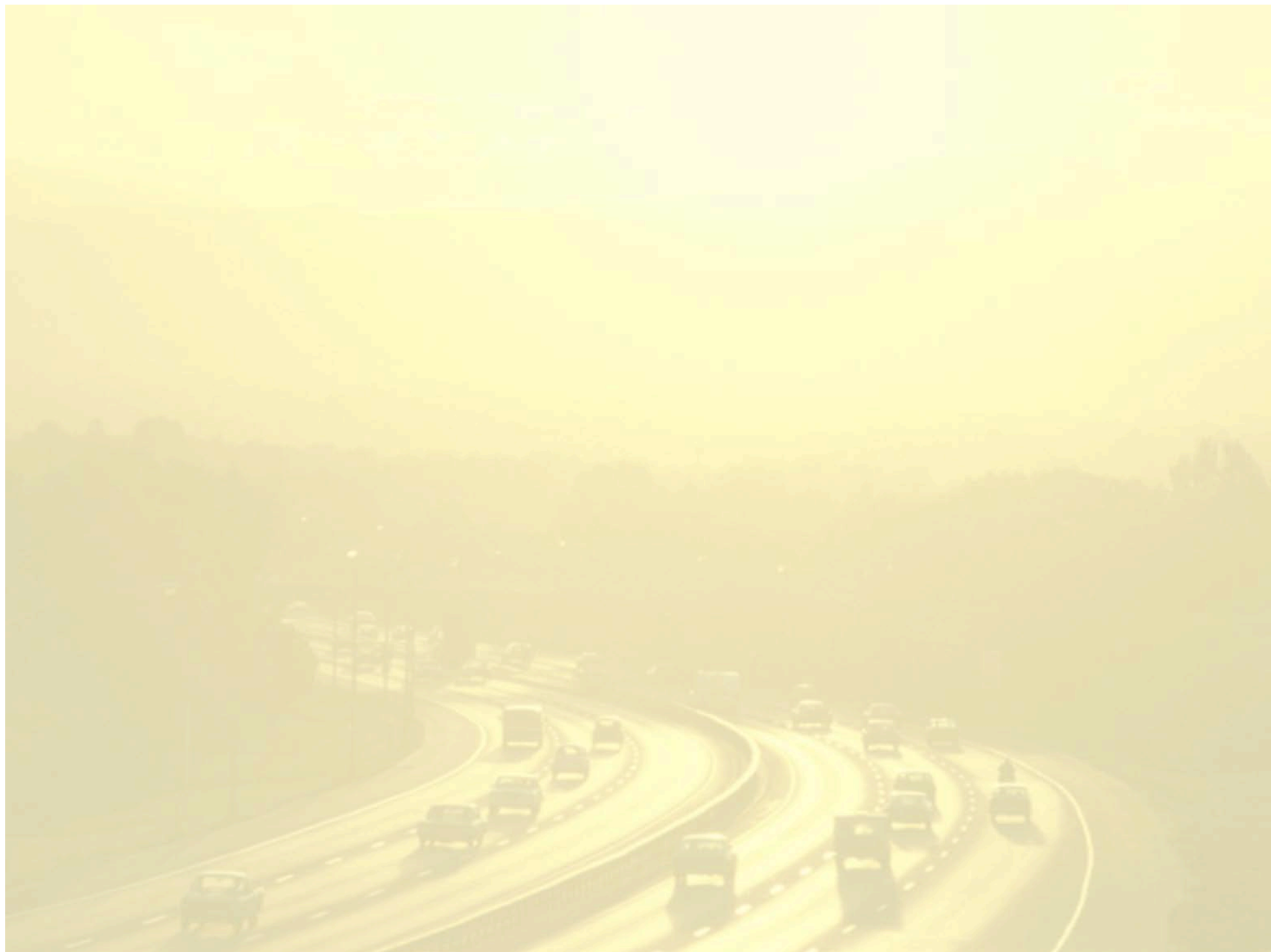
Proposed solutions? – cont.

- Induced traffic after new freeway built:
 - Trucks and cars will not move faster
 - more residents and workers will choose to use the new or enlarged freeway simply because it is (initially) less congested [this is called *induced traffic*]



Proposed solutions? Cont...

- Example of “induced traffic” during Port lockout in 2002:
 - Heavy duty-truck traffic on the I-710 (Long Beach) Freeway decreased by 50-60% during lockout -- but the total vehicle traffic dropped by only 5%,
 - “indicating that auto **drivers** essentially **filled the ‘voids’** created by the missing trucks **instantaneously**” (*statistics and quotation from Caltrans with emphasis added*)
 - Citation for above:
http://www.metro.net/board/agendas/2003/01_January/plnng/item12.doc



Conclusions

- Ports and goods movement are major sources of air pollution
- We are observing harmful health effects today, under current air pollution levels, with current levels of imported goods
- Air pollution levels must be reduced to protect health
- Yet imports continue to skyrocket ...

Conclusions, cont.

- Any further expansion of ports, freeways and rail yards to accommodate increasing imports will require:
 - Extraordinary technological fixes to control emissions, prevent noise and other health hazards, and protect health
 - Implementation of land use guidelines and buffer zones
 - A true examination of what the impacts are on health from continuing to expand our “built environment” in this way

Photo credits

- All photos are by Andrea Hricko except for the following:
 - Port of L.A. landscape and condos near freeway: Alison Cook
 - Single train near home: Nick Sramek
 - Distribution centers: Penny Newman
 - Child with nebulizer: Kris Smith
 - Ships and yard equipment: Port Web sites

The End

- Thank you.

